Upload Assignment: Assignment 6.2

ASSIGNMENT INFORMATION

Due Date	Points Possible
Monday, November 8, 2021 11:59 PM	**0.5** View Rubric

DUAL FORMULATION OF A NONLINEAR MMSE CLASSIFIER

Use the functions of the previous assignment to reconstruct the example of lesson 6.1 but using a dual representation an the polynomial kernel $k(\mathbf{x_i}, \mathbf{x_j}) = (\mathbf{x_i^T x_j} + 1)^3$

1) Construct a train dataset and represent them.

2) Construct a function that computer the kernel matrix **K**.

3) Compute the dual weights α_i of the MMSE solution.

4) Write an estimator in dual form as a function of kernel dot products between the trainikng and test data.

5) Plot the boundary,

6) Repeat the experiment, but using the Ridge Regression solution, this is

$$\boldsymbol{\alpha} = (\mathbf{K} + \gamma \mathbf{I})^{-1} \mathbf{y}$$

where γ is a small number. Show the result for different values of the parameter that are able to produce different solutions. Comment the results.

Provide a document that summarizes the theory and a graph of the result. Comment your results.